

## COMPLAINT RE ADVANCED METERING INFRASTRUCTURE (AMI)

Now comes Lynn Howard Ehrle, hereinafter referred to as the COMPLAINANT, on this the 6<sup>th</sup> day of November, 2013, and swears that he resides at 8888 Mayflower Drive in the Township of Plymouth [ph: 734-459-9488] and is and has been for 57 years a residential customer serviced by Detroit Edison [DTE].

Whereas, Complainant is a retired teacher currently engaged in investigative reporting and medical writing, and

Whereas, Complainant began a 43-year independent investigation of low-dose radiation health risks during his ten-year tenure (beginning in 1970) as vice president of the Consumer Alliance of Michigan and

Whereas, during the 1970s, Complainant presented numerous briefs before the Michigan Public Service Commission (hereinafter referred to as the MPSC or the Commission), and was twice-nominated to the Commission by two State legislators, and

Whereas, Complainant notes the **MPSC Mission Statement**, as follows: *The mission of the Michigan Public Service Commission is to grow Michigan's economy and **enhance the quality of life of its communities by assuring safe and reliable energy, telecommunications, and transportation services at reasonable rates**, and*

Whereas, approval of smart meters is in violation of the Commission's mission **to assure safe and reliable energy**, and

Whereas, **Public Act "460.6** states: *Public service commission; power and jurisdiction; Sec. 6. (1) The public service commission is vested with complete power and jurisdiction to regulate all public utilities in the state except a municipally owned utility, the owner of a renewable resource power production facility as provided in section 6d, and except as otherwise restricted by law. **The public service commission is vested with the power and jurisdiction to regulate all rates, fares, fees, charges, services, rules, conditions of service, and all other matters pertaining to the formation, operation, or direction of public utilities,**"* and

Whereas, the Commission has previously stated it has **no** power to regulate type or placement of meters by regulated electric utilities while ignoring its sweeping powers under PA 460.6, and

Whereas, on January 12, 2012, the MPSC launched an investigation into the deployment of smart meters by regulated electric utilities in Michigan, soliciting public comments, and

Whereas, the investigation took the form of a staff report, U-17000, that was presented to the Commission on June 29, 2012, and

Whereas, hundreds of complaints have been filed with the Commission that reference scientific reports (Appendix A) that show serious health and safety issues [see Appendix B & C], and

Whereas, the Commission, meeting on September 11, 2012, to review issues relating to the deployment of smart meters as reported in its Staff Report [Case No. U-17000], accepted the conclusion of the Staff that *“after careful review of the available literature and studies, the Staff has determined that the health risk from the installation and operation of metering systems using radio transmitters is insignificant,”* and

Whereas, the September 11 Order concludes: *The Commission finds the Staff’s report to be thoughtful and comprehensive; and the report should be accepted as a practical point of departure for further discussion and Commission action,* and

Whereas, Complainant’s analysis finds the U-17000 Staff Report to be neither thoughtful nor comprehensive, and

Whereas, by refusing to reference and summarize **the authoritative BioInitiative 2012 Report** (Appendix D) and a wide range of critical scientific papers in peer-reviewed journals, the authors of the staff report have refused to perform due diligence, have withheld significant public health and safety data from Commissioners, and have not only acted as surrogates for Michigan electric utilities but have demonstrated arrogance, bias, conflicts of interest, and a disregard for the public health and safety, and

Whereas, by permitting electric utilities to deploy smart meters throughout Michigan the Commission has acted in an arbitrary and capricious manner and has codified electric utility policies that allow smart meter installers to invade private property without proper identification, notification, or informed consent, and

Whereas, **Rule 403** of the Commission’s Rules of Practice and Procedure (1992 AACS, R 460.17403), provides that an application for rehearing may be based on claims of error, newly discovered evidence, facts or circumstances arising after the hearing, or unintended consequences resulting from compliance with the order, and

Whereas, claims of error, newly discovered evidence, facts or circumstances arising after the hearing, and unintended consequences resulting from compliance with the order are documented in this complaint, and

Whereas, in its September 11, 2012 Order the Commission **“reserves jurisdiction”** in the U-17000 case,

**Be it hereby resolved** that the Commission acknowledge the fact that said Staff Report is biased and lacks scientific credibility, thereby necessitating the following corrective measures:

1) Revisit the Staff Report [U-17000] as per Rule 403 and its order to “reserve jurisdiction,” with particular reference to the staff conclusion that *the health risk from the installation and operation of metering systems using radio transmitters is insignificant*, a statement that is disputed in hundreds of papers by authoritative experts who have long careers in the field.

- 2) Issue an order to suspend installation of smart meters until public health and safety issues have been resolved.
- 3) Establish an independent scientific fact-finding committee [no industry members] and seek nominations from non-profit nongovernmental organizations.
- 4) Invite four acknowledged independent EMF experts—David O. Carpenter, MD, University at Albany and Cindy Sage, MA (Editors of the BioInitiative 2012 Report); Magda Havas, PhD, Trent University, Ontario; Martin Blank, PhD, former president, Bioelectromagnetics Society—to a public Smart Meter Symposium dealing with health and safety issues [easily accessed via the internet] that were not addressed in the Staff Report, thus withholding significant research from Commission members.

## **Appendix A: Scientific Reports**

### **SMART METERS—RADIO FREQUENCY THREATS TO THE PUBLIC HEALTH AND SAFETY**

**Research by Lynn Howard Ehrle, M. Ed, freelance medical writer and investigative reporter; Vice President, Consumer Alliance of Michigan (1970s); presented briefs in PSC utility rate cases; twice-nominated to the Commission by two legislators; retired teacher—political science, history, consumer law, sociology; Chair—International Science Oversight Board, composed of 40 scientists and physicians from 11 countries, including 15 low-dose radiation experts.**

**Member: National Writers Union UAW Local 1981, Radiation Research Society, American Federation of Teachers and National Education Association (ret).**

**MPSC Mission Statement:** The mission of the Michigan Public Service Commission is to grow Michigan's economy and **enhance the quality of life of its communities by assuring safe and reliable energy, telecommunications, and transportation services at reasonable rates.**

### ***U-17000 REPORT TO THE COMMISSION***

***Prepared by the MPSC Staff, 29 June 2012***

**The Staff's review supports the following conclusions:**

*Smart meters are quickly becoming the primary replacement meter to the existing electromechanical meters because they are more accurate, enhance outage response and offer opportunities for customer energy management. The traditional electromechanical meter is obsolete and currently not in production. Smart meters are an important component to the success of a much larger picture, an emerging smart grid. As the United States Department of Energy (U.S. DOE) states: "[a] smart grid uses digital technology to improve the reliability, security, and efficiency of the electricity system. ..."*

*After **careful review** of the available literature and studies, the Staff has determined that the health risk from the installation and operation of metering systems using radio transmitters is insignificant. In*

*addition, the appropriate federal health and safety regulations provide assurance that smart meters represent a safe technology.*

**NOTE BY LH EHRLE:** The report represents no careful review. It ignores health risk research by independent scientists, including those listed in the report below by Sage Associates and is in violation of the MPSC Mission. Furthermore, neither Detroit Edison nor the Commission provided residential customers with independent scientific evidence of smart meter health risks.

### **Subject: Letter of Comment on Smart Meter Report [California]**

Sage Associates, Environmental Consultants, January 17, 2011 (referencing Susan Hackwood, PhD, Executive Director, California Council on Science and Technology and Lora Lee Martin, Director, Strategic Policy Initiatives and Government Affairs CCST)

**This letter addresses the CCST Smart Meter Report issued on January 11, 2011.** Overall, the report does begin to highlight international scientific concerns about chronic, low- intensity radiofrequency radiation exposures. Radiofrequency radiation health risks have been and continue to be addressed by scientific bodies around the world as a credible threat to health. [1-4] The Report text provides an introduction to the science and public health questions on health impacts that can reasonably be expected from chronic exposure to low levels of RF in close proximity to occupied space in homes, schools and other daily living environments.

**Conclusions Are Not Supported by Evidence of Compliance with FCC Safety Limits:** There is no solid basis in the CCST report to conclude (or to support the contention) that FCC public safety limits are met for smart meters, in the manner installed and operated.

**Conclusions Disregard Evidence in the Report for Possible Health Risk:** The text of the report only partially documents potential health risks from low-level, chronic exposure to radiofrequency radiation. The conclusions ignore this discussion.

**Conclusions Do Not Follow from Report:** Conclusions of the report are inconsistent with the report's more balanced warnings about possible risks to health. The overall legitimacy of the report is cast into doubt as a result. CCST's report could equally well have concluded *'there is ample evidence to advise the California Legislature that, based on multiple studies of radiofrequency radiation below current FCC safety limits, it is advisable to issue a cautionary warning on the wireless component of smart meters until a full assessment of their effects is completed by independent experts. Further, it can be concluded that the continued rollout of wireless smart meters may increase public health risks on a widespread basis and should be reconsidered in light of the existing scientific evidence and public health warnings for such chronic exposures to pulsed RF.'* I was one of the expert reviewers invited by CCST to submit comments for the Committee. CCST asked several experts to answer two questions (see below).

**Since the Report conclusions apparently ignored much of the expert and committee input – only intervention by the final editor(s) to disregard key evidence explains how CCST's final conclusions could give rise to the "all clear" message.**

### **Questions asked of Invited Expert Reviewers**

1) Are the current FCC standards for smart meters sufficiently protective of public health, taking into account current exposure levels to radiofrequency (RF) and electromagnetic fields? 2) Are additional technology-specific standards needed for smart meters and other devices that are commonly found in and around homes, to ensure adequate protection from adverse health effects?

## CCST Report Conclusions

1) “The FCC standard provides a currently accepted factor of safety against known thermally induced health impacts of smart meters and other electronic devices in the same range as RF emissions. Exposure levels from smart meters are well below the thresholds for such effects. This conclusion presents a partial response to Question 1 – only that the FCCs thermal standards are adequate (these standards prevent only heating and burning of tissues, and shock hazard, however). The conclusion does not address non-thermal (or low-intensity) RF exposures, which is really the point. It also is silent on FCC violations of public safety limits, which have been calculated to occur.[13]

2) “There is no evidence that additional standards are needed to protect the public from smart meters.” By ignoring evidence for low-intensity RF adverse health effects, the Report essentially then dismissed the need for changes in public safety standards for pulsed RF. This conclusion simply cannot be reconciled with the evidence presented in the report (thin as it is), nor with the larger body of evidence known to experts in this field. That evidence is now widely discussed by international health and safety experts who find the existing thermal standards inadequate to protect public health. [1,2]

### **3) FCC Violations and Excessively High RF Exposures are Ignored**

Another report issued on January 1, 2011 is titled *Assessment of Radiofrequency Microwave Radiation Emissions from Smart Meters* by Sage Associates.[13] It documents what RF levels may be expected.

**The Assessment seems not to have been considered either by the CCST experts nor the Committee.** The Assessment identified where and under what conditions smart meters can cause FCC violations of public safety limits as the meters are typically installed and operated. The CCST report concludes that all smart meter RF exposures will be well below the FCC safety limits, and this is erroneous. **To date, there have been no other studies that provide sufficient information to support the claim that smart meters comply with FCC regulations.** In fact, there is solid evidence from a review of the FCC Grants of Authorization and attached FCC RF exposure studies that many thousands (perhaps millions) of meters are in clear violation of one or more of the explicit limitations noted on each FCC Grant of Authorization. The FCC Grants of Authorization are void unless meters are installed in compliance with every one of those limitations. The Assessment also shows many cases where, although the FCC safety limits may not be violated, excessively high RF levels from smart meters would be predicted to occur within the home or in other occupied space. In many instances, predicted RF levels are many times higher than those reported to cause adverse health effects. [5-12]

**4) Such exposures, if chronic, would reasonably be expected to result in increased disease and disability.**

## Misleading Comparisons Are Made to Cell Phones

**CCST’s report makes misleading comparisons of RF exposures from cell phone use and from smart meters, an apparent effort to minimize public health concern.** If the FCC had thought smart meters would be held to the head in normal operation, they would have required smart meters to be tested for SAR compliance, not power density. These are not the same, and to compare them is wrong. Cell phones produce a high, localized RF exposure at the head. They are presumed to be used within 20 centimeters (8”) of the body. **Smart meters, like cell towers, create whole- body exposure rather than localized exposure in most circumstances, and specific FCC compliance depends on keeping a 20 cm or greater distance from the meter. Cell phone use is voluntary; smart meter exposure is involuntary.** Cell phone use is sporadic or intermittent, but smart meter exposure estimates are ‘all over the map’. There is great uncertainty on this point, and as such, the outcome cannot be known; therefore, no assertion of safety or compliance can be given.

## **RF Levels from Smart Meters are Unreconciled and Need Assessment**

PG&E's sole figure for RF exposure was given during CPUC proceedings as 1/6000th of the federal health (sic) limit. Nothing is given about the specific conditions under which this estimate might be true (antenna make and model, duty cycle, which FCC formula, what reflection factor, one meter or multiples, etc). However, from that single data point, we calculate that RF exposure to be 0.11  $\mu\text{W}/\text{cm}^2$  at 10 feet (where the FCC safety limit is known to be 655  $\mu\text{W}/\text{cm}^2$  at the frequencies 915 MHz and 2405 MHz). This means that at 10 feet from the meter, PG&E says the RF level will be 0.11  $\mu\text{W}/\text{cm}^2$ . Kundi and Hutter (Pathophysiology, 2009)[2] say they *don't yet find RF health impacts at levels below 0.05 to 0.1  $\mu\text{W}/\text{cm}^2$*  but do find consistent evidence of adverse health impacts at levels generally above that (based on at least eight cell tower studies conducted internationally). These figures were for healthy adult populations.

From the CCST Report, figures 1 and 7 (identical) give a comparison of RF levels from various sources, including two estimates for smart meters. They are 4  $\mu\text{W}/\text{cm}^2$  at 10 feet, and 40  $\mu\text{W}/\text{cm}^2$  at 3 feet away (no source is identified for these estimates, and again, the operational conditions are unspecified).

Another estimate from CCST's report (pages 17 and 22) says that a 'worst case' RF estimate – a meter that transmits continuously – would produce 60% of the FCC limit (which is 655  $\mu\text{W}/\text{cm}^2$  for the combined antenna frequencies), or 393  $\mu\text{W}/\text{cm}^2$ . However, the location at which this RF exposure level is calculated to occur is not given. The information is not useful. But, given the peer-reviewed scientific literature, any of these estimates is too high for chronic exposure to pulsed RF. [1,2] No one can reconcile or separate reasonable from unreasonable RF predictions without some better, more systematic computer modeling of RF exposures.

## **Cumulative RF is Not Assessed Prior to Meter Installation**

**None of the PG&E or the EPRI estimates includes any provision for 'what amount of RF exists already' and does the smart meter's additional RF burden push that location over the FCC limit.** The CCST report does not consider cumulative sources of RF (Wi-Fi, nearby cell tower(s), AM, FM, TV, HAM transmitters, etc). The cumulative RF burden must be considered, including ongoing RF exposures from existing sources. Further, since these meters are part of a radiofrequency surveillance and communications system that includes cell antennas (to relay RF signals to the utility) and eventually, power transmitters on/within appliances (to relay RF signals within the home to the smart meter), these critical omissions in the overall RF burden placed on people from the 'smart meter program' should be assessed. No one can install a smart meter and make a blanket assertion the environment still complies with public safety standards in the after condition, if the before condition is not known. RF exposures from multiple sources are additive.

## **Recommendations to CCST**

- 1) Advise the California Legislature that further assessment of smart meter impacts to public health and safety are necessary before further deployment.
- 2) Recommend de-activation of wireless transmitters in meters already installed pending further review.
- 3) Recommend that California Legislative hearings be scheduled on smart meters.
- 4) Post in their entirety each of the written expert review letters to CCST.
- 5) Recommend that the California Department Public Health receive and log smart meter health complaints.

**Cindy Sage, MA, Sage Associates, Co-Editor, BioInitiative Report, Research Fellow, Department of Oncology, Orebro University Hospital, Orebro, Sweden**

## References

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2. Pathophysiology Journal, Special Issue 16: Volumes 1 and 2, 2009. Elsevier Press. *There are chapters on low- intensity radiofrequency and wireless radiation health effects based on scientific literature from the realms of genotoxicity, genomics and proteomics, neurology, blood-brain barrier effects, stress (heat shock) proteins, immunology and inflammatory diseases, cancer and public health consequences of ignoring warnings given global proliferation of wireless exposures at billions of times greater levels than earth and humans evolved with.*
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**Sage Associates, Environmental Consultants**  
**Briefing Letter on Electric Utility Smart Meters (excerpts) March 8, 2010**

This briefing letter is submitted to highlight information we received from our local economic concerns that are being voiced around the country by consumers, utility analysts, economists, internet security experts and parents.

**Mandatory Installation: No one can opt-out.** Utilities have received authorization in many states to install them.

**The program is expensive with very little demonstration that consumers will want this service, or choose to participate.** They include economic concerns, lack of privacy of personal information, easier disconnection of service, health and safety concerns, reliability, increased vulnerability to hacking, increased risk of planting of malicious software on networks, security risks when away from home (burglaries), fire risks, explosions, interference with critical care equipment (medical), and meter overcharges. While there is on-going deliberation about the pros and cons of smart meters, we hope our community will become better informed before the utility starts installing meters.

**The economic justification these billion dollar programs is that the costs will be offset by energy savings.** The system is supposed to allow variable-pricing of electricity to discourage heavy usage during peak periods like hot summer days. The benefit to variable pricing is supposed to be that it will give people incentive to decrease energy usage when wholesale energy prices are highest. However, the costs to build up the new infrastructure are very high, with little information about whether or when consumers might decide to participate. Customer compliance might be low, once the ramifications are better known. In order for there to be any energy savings, customers must first choose to participate, and install 10-15 power transmitters that radiate radiofrequency/microwave radiation inside the home to signal the smart meter.

**The use of wireless networks to relay energy information leaves open the potential for misuse of personal data, billing and usage information, and other private information.** Privacy breaches have already been documented (illegal access of 179,000 accounts at Hydro Toronto, for example). It also may increase burglary risk, since home electrical usage is made electronically visible. When unoccupied, the home uses less electricity. Its like advertising to criminals with wireless detection equipment that you are not home.

**Smart meters are alleged to open up the potential for hacking into personal wireless networks used for banking, bill paying, and private communications.** Concerns over the security of the US electrical grid have received widespread media coverage (Wall Street Journal April 27, 2009). Smart meters provide a new vulnerability to intentional sabotage as well as to inadvertent access to private information, since the network is wireless and it adds direct linkage to home computers and personal data. The wireless network proposed to enable smart grid and smart meter technology is a full saturation, full-coverage RF blanket of wireless into every home and business that can increase the points of entry for malicious software (malware), to electrical service disruption or disconnection, and to terrorist attack on the electrical and communications grid throughout the country (Wired.com, March 4, 2010).



**There are widespread reports of excessive charges, due to malfunctioning smart meters.** In Bakersfield, CA, where PG&E started installing the first smart meters, more than 100 people attended a meeting held by State Sen. Florez to complain about absurd electric bills. Those with new smart meters had bills 200-400% higher, with no increase in power use as compared to the same months of the previous year. The meters are thought to malfunction because of spurious RF signals (electronic glitches). It is reported that high frequencies can make disc type electric meters spin faster, making it appear that more electricity has been used than actually has. For this reason, electrical bills have also increased near cell antenna towers for the same reason (high radiofrequency environments). A class action lawsuit has already been filed in Bakersfield, CA because of numerous consumer complaints. Some utilities have provided technical reports on radiofrequency/microwave emissions. They all say the smart meters are “*in compliance with FCC public safety limits*”. However, the RF reports indicate that the smart meter will produce over 300 microwatts/centimeter squared near the meter, and this will produce elevated RF both inside and outside the home. Chronic exposure to radiofrequency and microwave radiation is still considered a potential health risk, and studies continue at NIEHS and at the World Health Agency to determine actual health risks. These smart meter RF/MW levels are far higher than those already reported to cause health risks. Compliance is not safety, since the existing FCC safety limits are under challenge, and have already been called ‘insufficient to protect public health’ by some federal agencies.

**The power transmitters that also have to go inside the home (on each appliance that is reporting to the smart meter) produce high, intermittent RF in short bursts.** If the consumer does opt-in to a smart meter program, he/she will have to install multiple power transmitters (one per appliance) inside the home at additional cost for the wireless thermostat, power transmitters and wireless display). To date, none of the technical RF reports we’ve reviewed is able to predict the cumulative RF from the smart meter plus the power transmitters inside the home, the intervals of RF transmission, and the additional RF transmissions from neighboring homes that can ‘piggyback’ on your smart meter system. This ‘piggybacking’ part of the system means that other homes can put additional RF signals through your meter, if they don’t have a good signal to the utility’s reporting cell antenna network...Wireless medical devices in use within homes may malfunction. Spurious radiofrequency signals are already reported in published studies to interfere with critical care equipment, ventilators, pain pumps, wireless insulin pumps and other medical devices. There does not appear to be any testing results on the effect of smart meters and critical care devices in advance of their deployment, but the issue is real. There can also be interference with other electronic devices (home office printers, FAX, scanners, computers, television and cable settings, security systems, etc).

**There are reports in Bakersfield and from some Alabama communities that the installation of smart meters caused fires** (15 reported in Bakersfield, one explosion of a smart meter...Unintentional re-radiation of RF signal(with its higher energy) on electrical wires may overload wires, particularly in poorlygrounded or ungrounded homes, or homes with older wiring or faulty wiring.

The federal government, through the Obama stimulus package, has supported the rollout of this new technology. The California Public Utilities Commission has authorized PG&E, SCE and SDG&E to install new smart meters as part of the SmartGrid energy conservation ideal. In other parts of the country like the State of Connecticut, officials have required a ‘go-slow’ approach to testing first. However, no agency has mandated that the meters be wireless, thus opening the conversation to **“why not hard-wired, shielded cable”?**

## **Legislative Request Letter to CCST Requesting a Study on Smart Meters**

### **Physical Sciences/Engineers**

- Kenneth Foster, Professor, Department of Bioengineering, University of Pennsylvania
- Rob Kavet, Physiologist/Engineer, Electric Power Research Institute (EPRI)

### **Biologists/medical**

- De-Kun Li, MD, Ph.D., Senior Reproductive and Perinatal Epidemiologist, Division of Research, Kaiser Foundation Research Institute, Kaiser Permanente
- Asher Sheppard, Ph.D., Asher Sheppard Consulting, trained in physics, environmental medicine, and neuroscience
- Magda Havas, B.Sc., Ph.D., Environmental & Resource Studies, Trent University, Peterborough, Canada
- Cindy Sage, MA, Department of Oncology, University Hospital, Orebro, Sweden and Co-Editor, BioInitiative Report

## **UBCM passes request for Smart Meter moratorium**

### **Lake Cowichan Gazette, British Columbia**

**October 03, 2011**

The Union of BC Municipalities (UBCM) passed a request for a moratorium on BC Hydro's Smart Meters, Friday.

### **PHILADELPHIA NEWS**

## **Fire Concerns Lead PECO To Halt Smart Meter Installations**

**Posted: Aug 15, 2012 by Jeff Cole**

After at least two fires and over a dozen incidents of overheating, PECO is halting its controversial smart meter installation program. The stunning announcement came Wednesday morning as FOX 29 investigators pressed the company over a spate of recent incidents, including fires in Bucks County. PECO had plans to install 1.6 million of the so-called smart meters.

## **Ten-Person Complaint Pursuant to 35-A M.R.S.A. Section 1302 Regarding “Smart Meters” & “Smart Meter” Opt-Out as**

### **Promulgated by the Maine Public Utilities Commission (MPUC)**

**July 29, 2011 (Excerpts by Lynn Howard Ehrle)**

WE, the undersigned\*\* aggrieved Complainants, are customers of Central Maine Power (CMP). While this complaint is based on proposals and actions by CMP, the complaint is directed not only at CMP for levying what, given the facts, must be an unreasonable, unjust and discriminatory fee against ratepayers choosing to opt out of the smart meter program, but also at the PUC because of its May 19 and June 22,

2011 Orders (Part I and Part II) requiring CMP customers to pay the utility, should they, the ratepayer, elect to opt out of the program. WE request the Public Utility Commissioners open an investigation for the purpose of examining this issue since new and important evidence specifically addressing non-ionizing radiation of the type emitted by smart meters, has been published earlier this year and also after the May 19 Order, and was not considered in either Order (in fact its absence was cited by the Maine CDC as supporting a lack of adverse health effects). Furthermore, privacy/electronic trespass concerns have not been adequately considered in previous Orders and new information for the Commissioners on privacy/electronic trespass issues is also presented here. The complaint enters other electronic trespass and health evidence including privacy guidelines, which may not have been raised in earlier complaints or be a part of the record

## **Appendix B: Statements by Independent Scientists**

**William Rea, MD**, Founder & Director of the Environmental Health Center, Dallas;  
Past President, American Academy of Environmental Medicine

***“Sensitivity to electromagnetic radiation is the emerging health problem of the 21st century. It is imperative health practitioners, governments, schools and parents learn more about it. The human health stakes are significant”.***

**Martin Blank, PhD**, Associate Professor, Department of Physiology and Cellular Biophysics, Columbia University, College of Physicians and Surgeons; Researcher in Bioelectromagnetics; Author of the BioInitiative Report’s section on Stress Proteins.

*“Cells in the body react to EMFs as potentially harmful, just like to other environmental toxins, including heavy metals and toxic chemicals. The DNA in living cells recognizes electromagnetic fields at very low levels of exposure; and produces a biochemical stress response. The scientific evidence tells us that our safety standards are inadequate, and that we must protect ourselves from exposure to EMF due to power lines, cell phones and the like, or risk the known consequences. The science is very strong and we should sit up and pay attention.”*

**Olle Johansson, Ph.D**, Associate Professor, The Experimental Dermatology Unit, Department of Neuroscience, Karolinska Institute, Stockholm, Sweden; Author of the BioInitiative Report’s section on the Immune System.

*“It is evident that various biological alterations, including immune system modulation, are present in electrohypersensitive persons. There must be an end to the pervasive nonchalance, indifference and lack of heartfelt respect for the plight of these persons. It is clear something serious has happened and is happening. Every aspect of electrohypersensitive peoples’ lives, including the ability to work productively in society, have healthy relations and find safe, permanent housing, is at stake. The basics of life are becoming increasingly inaccessible to a growing percentage of the world’s population. I strongly advise all governments to take the issue of electromagnetic health hazards seriously and to take action while there is still time.”*

**David Carpenter, MD, Professor, Environmental Health Sciences, and Director, Institute for Health and the Environment, School of Public Health, University of Albany, SUNY, Co-Editor, The BioInitiative Report ([www.BioInitiative.org](http://www.BioInitiative.org)).**

*“Electromagnetic fields are packets of energy that does not have any mass, and visible light is what we know best. X-rays are also electromagnetic fields, but they are more energetic than visible light. Our concern is for those electromagnetic fields that are less energetic than visible light, including those that are associated with electricity and those used for communications and in microwave ovens. The fields associated with electricity are commonly called “extremely low frequency” fields (ELF), while those used in communication and microwave ovens are called “radiofrequency” (RF) fields. Studies of people have shown that both ELF and RF exposures result in an increased risk of cancer, and that this occurs at intensities that are too low to cause tissue heating. Unfortunately, all of our exposure standards are based on the false assumption that there are no hazardous effects at intensities that do not cause tissue heating.”*

**Magda Havas, BS, PhD, Centre for Health Studies, Trent University, Expert in radiofrequency radiation, electromagnetic fields, dirty electricity and ground current.**

*“Radio frequency radiation and other forms of electromagnetic pollution are harmful at orders of magnitude well below existing guidelines. Science is one of the tools society uses to decide health. In the case of telecommunications equipment, such as cell phones, wireless networks, cell phone antennas, PDAs, and portable phones, the science is being ignored. I work with people who have become electrically hypersensitive (EHS) and I have received emails and phone calls from those who have had smart meters placed on their homes. They complain of ill health and many are unable to use the room closest to the smart meter. These individuals have no place to ‘hide’ from the growing levels of electrosmog especially in densely populated urban centers. Sickness contributes to time off work and away from school, growing medical costs and a general poorer quality of life. Children are particularly vulnerable as are pregnant women and those with compromised immune systems. The presence of metal implants in the body (such as metal pins in bones) may concentrate the absorption of radiation at the location of implantation, inducing thermal effects from lower power densities than would ordinarily cause such harm (Massey 1979). Some implants, such as pace makers and deep brain stimulators for Parkinson’s disease, may malfunction and this can be fatal.”*

**Whitney North Seymour, Jr., Esq., Attorney(ret); Former New York State Senator & US Attorney, Southern District of NY, Co-Founder, Natural Resources Defense Council.**

*“Electromagnetic radiation is a very serious human and environmental health issue that needs immediate attention by Congress. The BioInitiative Report is a major milestone in understanding the health risks from wireless technology. Every responsible elected official owes it to his or her constituents to learn and act on its finding and policy recommendations.”*

**Eric Braverman, MD, brain researcher, Author of The Edge Effect, and Director of Path Medical in New York City and The PATH Foundation.**

*“There is no question EMFs have a major effect on neurological functioning. They slow our brain waves and affect our long-term mental clarity. We should minimize exposures as much as possible to optimize neurotransmitter levels and prevent deterioration of health”.*

**Abraham R. Liboff, PhD**, Research Professor, Center for Molecular Biology and Biotechnology, Florida Atlantic University, Co-Editor, Electromagnetic Biology and Medicine.

*“The key point about electromagnetic pollution that the public has to realize is that it is not necessary that the intensity be large for a biological interaction to occur. There is now considerable evidence that extremely weak signals can have physiological consequences. These interactive intensities are about 1000 times smaller than the threshold values formerly estimated by otherwise knowledgeable theoreticians, who, in their vainglorious approach to science, rejected all evidence to the contrary as inconsistent with their magnificent calculations. These faulty estimated thresholds are yet to be corrected by both regulators and the media.”*

**Samuel Milham MD, MPH**, Medical epidemiologist in occupational epidemiology. First scientist to report increased leukemia and other cancers in electrical workers and to demonstrate that the childhood age peak in leukemia emerged in conjunction with the spread of residential electrification.

*“Very recently, new research is suggesting that nearly all the human plagues which emerged in the twentieth century, like common acute lymphoblastic leukemia in children, female breast cancer, malignant melanoma and asthma, can be tied to some facet of our use of electricity. There is an urgent need for governments and individuals to take steps to minimize community and personal EMF exposures.”*

**Camilla Rees, CEO, Wide Angle Health, LLC**, Patient education and advocacy.

*“The U.S. spends over \$2 trillion dollars on health care each year, of which about 78% is from people with chronic illnesses, without adequately exploring and understanding the association between electromagnetic fields and electrosensitivity, cancers, heart irregularity, fertility impairment, brain effects, cognitive function, behavioral and emotional problems, immune system effects, neurological and fetal effects.”*

**Prof. Livio Giuliani, PhD**, Spokesperson, International Commission for Electromagnetic Safety ([www.icems.eu](http://www.icems.eu)), Deputy Director, Italian National Institute for Worker Protection and Safety, East Venice and South Tyrol; Professor, School of Biochemistry of Camerino University, Italy.

*“The Venice Resolution, initiated by the International Commission for Electromagnetic Safety (ICEMS) on June 6, 2008, and now signed by nearly 50 peer reviewed scientists worldwide, states in part, We are compelled to confirm the existence of non-thermal effects of electromagnetic fields on living matter, which seem to occur at every level of investigation from molecular to epidemiological. Recent epidemiological evidence is stronger than before. We recognize the growing public health problem known as electrohypersensitivity, and we call upon governments to apply the Precautionary Principle as an interim measure while more biologically relevant exposure standards are developed.”*

**Paul J. Rosch, MD**, Clinical Professor of Medicine and Psychiatry, New York Medical College; Honorary Vice President International Stress Management Association; Diplomate, National Board of Medical Examiners; Full Member, Russian Academy of Medical Sciences; Fellow, The Royal Society of Medicine; Emeritus Member, The Bioelectromagnetics Society

*“Numerous research reports have confirmed that non thermal fields from cell phones, tower transmitters, power lines, and other man made sources can significantly affect various tissues and physiologic*

*functions. We are constantly being bathed in an increasing sea of radiation from exposure to the above, as well as electrical appliances, computers, Bluetooth devices, Wi-Fi installations and over 2,000 communications satellites in outer space that shower us with signals to GPS receivers. New WiMax transmitters on cell phone towers that have a range of up to two square miles compared to Wi-Fi's 300 feet will soon turn the core of North America into one huge electromagnetic hot spot."*

## **Appendix C: Smart Meter Health Complaints—EMF Safety Network**

Utility customers and scientific papers have reported new or worsening health problems since the utility smart meter system has been installed on their homes or in their neighborhoods. Symptoms include:

- Sleep problems (insomnia, difficulty falling asleep, night waking, nightmares)
- Stress, agitation, anxiety, irritability
- Headaches, sharp pain or pressure in the head
- Ringing in the ears, ear pain, high pitched ringing
- Concentration, memory or learning problems
- Fatigue, muscle or physical weakness
- Disorientation, dizziness, or balance problems
- Eye problems, including eye pain, pressure in the eyes,
- Cardiac symptoms, heart palpitations, heart arrhythmias, chest pain
- Leg cramps, or neuropathy
- Arthritis, body pain, sharp, stabbing pains
- Nausea, flu-like symptoms
- Sinus problems, nose bleeds
- Respiratory problems, cough, asthma
- Skin rashes, facial flushing
- Urinary problems
- Endocrine disorders, thyroid problems, diabetes
- High blood pressure
- Changes in menstrual cycle
- Hyperactivity or changes in children's behavior
- Seizures
- Recurrence of cancer

## Appendix D: BioInitiative 2012 Report [Conclusions]

David O. Carpenter, MD & Cindy Sage, MA—Editors (bioinitiative.org)

The BioInitiative 2012 Report is an analysis by **29 independent scientists and health experts** from around the world about possible risks from wireless technologies and electromagnetic fields.

**\*\* Overall, these 1800 or so new studies** report abnormal gene transcription (Section 5); genotoxicity and single and double-strand DNA damage.

**\*\* Bioeffects** are clearly established and occur at very low levels of exposure to electromagnetic fields and radiofrequency radiation. Bioeffects can occur in the first few minutes at levels associated with cell and cordless phone use. Bioeffects can also occur from just minutes of exposure to mobile phone masts (cell towers), WIFI, and **wireless utility ‘smart’ meters that produce whole body exposure.**

**\*\* Many of these bioeffects** can reasonably be presumed to result in adverse health effects if the exposures are prolonged or chronic. This is because they interfere with normal body processes (disrupt homeostasis), prevent the body from healing damaged DNA, produce immune system imbalances, metabolic disruption and lower resilience to disease across multiple pathways.

**\*\* Human sperm** are damaged by cell phone radiation at very low intensities in the low microwatt and nanowatt/cm<sup>2</sup> range (0.00034–0.07 uW/cm<sup>2</sup>). **Sperm lack the ability to repair DNA damage.**

**\*\* There is good evidence** to suggest that many toxic exposures to the fetus and very young child have especially detrimental consequences depending on when they occur during critical phases of growth and development (time windows of critical development), where such exposures may lay the seeds of health harm that develops even decades later. **Existing FCC and ICNIRP public safety limits seem to be not sufficiently protective of public health**, in particular for the young (embryo, fetus, neonate, very young child).

**\*\* There is sufficient scientific evidence to warrant the selection of wired internet, wired classrooms and wired learning devices**, rather than making an expensive and potentially health-harming commitment to wireless devices that may have to be substituted out later. Wired classrooms should reasonably be provided to all students who opt-out of wireless environments.

**\*\* Several thousand scientific studies** over four decades point to serious biological effects and health harm from EMF and RFR. These studies report genotoxicity, single-and double-strand DNA damage, chromatin condensation, loss of DNA repair capacity in human stem cells, reduction in free-radical scavengers (particularly melatonin), abnormal gene transcription, neurotoxicity, carcinogenicity, damage to sperm morphology and function.

**\*\* All relevant environmental conditions**, including EMF and RFR, which can degrade the human genome, and impair normal health and development of species including homo sapiens, should be given weight in defining and **implementing prudent, precautionary actions to protect public health.**

**\*\* Human stem cells** do not adapt to chronic exposures to non-thermal microwave (cannot repair damaged DNA), and **damage to DNA in genes in other cells generally do not repair as efficiently.**